

REMARKS

The Office Action of November 24, 2009 has been reviewed and the Examiner's comments carefully considered. Claims 1-19 are pending in this application. Claims 1 and 12 are independent claims.

Claims 1-2, 6-13, and 17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over United States Patent No. 6,738,100 to Hampapur et al. (hereinafter "the Hampapur patent") in view of United States Patent No. 5,175,805 to Carrie (hereinafter "the Carrie patent"). Claims 3 and 14-16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Hampapur patent and the Carrie patent in view of United States Patent No. 6,539,418 to Schneider et al. Claims 4-5, and 18-19 stand rejected under 35 U.S.C. § 103(a) for obviousness over the Hampapur patent and the Carrie patent in view of United States Patent No. 7,308,147 to Sano.

The Prior Art

The Hampapur patent is directed toward a system for detecting scene changes in a video stream in order to establish meta data describing a full length video. More specifically, the Hampapur patent discloses a system for analyzing a sequence of frames to pick a frame that is most representative of the image portrayed by that sequence of frames and repeating this process along the length of a video until it has a condensed summary of the full length video.

The Carrie patent discloses a technique for rendering graphic objects on a computer display device. More specifically, the Carrie patent addresses the problem of having hidden surfaces or edges when several polygons contribute to the appearance of a single pixel in the final graphical rendering (see the Carrie patent, column 3, lines 39-41). In the technique described by Carrie, any number of graphical objects can be compared separately to the frame buffer, the frame buffer representing those graphic objects rendered prior to the current graphic object to be rendered. Pixel information is computed and stored in a frame buffer. However, in cases where pixel information for a particular pixel is to be combined because two polygons

contribute to a single pixel, the Carrie technique delays this computation by storing the pixel information. To maintain this pixel information, the first set of pixel information is stored in the frame buffer and the second set of pixel information is stored in the pixel buffer. The pixel buffer is stored until all subsequent graphic objects have been processed, and some of the pixels to be combined that are stored in the pixel buffer may decrease because subsequent graphic objects override (see the Carrie patent, column 6, lines 47-55).

The pixel buffer of the Carrie patent permits the time intensive pixel blending computations of selected pixel information to be postponed until additional pixel information is available which may simplify the processing of the pixels shared in the pixel buffer. For example, a subsequent graphic object rendered is located completely in front of the portion of a previously rendered graphic object represented by a set of pixel information stored in the pixel buffered(see the Carrie patent, column 7, lines 1-8).

The Present Invention

Amended independent claim 1 of the present invention is directed toward a method of capturing a new video frame, wherein said new video frame comprises a series of new frame pixels to be captured, which series includes an initial new frame pixel to be captured and a final new frame pixel to be captured, the method comprising the steps of, beginning with the initial new frame pixel: (A) receiving for comparison, at a comparison module, a new frame pixel from the series transmitted to the comparison module from a target computer and being represented in the video signal of the target computer; then (B) comparing, using the comparison module, the new frame pixel to a corresponding reference frame pixel of a reference video frame represented in the video signal of the target computer and previously transmitted to the comparison module from the target computer; then (C) if the final new frame pixel has not been captured, repeating steps (A) and (B) for the next new frame pixel in the series; whereby a remote computer displaying the video output of the target computer is updated using results of the comparison between new frame pixels and corresponding reference frame pixels.

Amended independent claim 12 is directed toward a system for capturing a new video frame from a sequence of video frames.

None of the Prior Art, Separately or in Combination Teaches or Suggests the Method of Independent Claim 1

In the present Office Action, the Examiner asserts, with regard to claim 1, that the preamble and step (A) are disclosed in the Hampapur patent. He further asserts that references to target and remote computer in the preamble show only intended use and has not been given any patentable weight because the recitation occurs in the preamble. Still further, the Examiner has asserted that steps (B) and (C) from claim 1 of the present application are not disclosed in the Hampapur patent, but are disclosed in the Carrie patent. Finally, the Examiner has stated that it would have been obvious to combine the teachings of the Carrie patent into the Hampapur patent in order to use memory efficiently.

As amended, step (A) of claim 1 of the present application requires receiving, at a comparison module, a new frame pixel from the series transmitted to the comparison module from a target computer and being represented in the video signal of the target computer. In addition, claim 1 requires a remote computer displaying the video output of the target computer is updated using results of the comparison between new frame pixels and corresponding reference frame pixels.

Applicants respectfully contend that the Hampapur patent does not disclose receiving pixels at a comparison module that are represented in the video signal of the target computer. Applicants contend that the Hampapur patent describes condensing existing video files (see the Hampapur patent, column 3, lines 11-15). Further, pixels are not transmitted to a comparison module from a target computer in the Hampapur patent, instead, keyframing software is executed on a personal computer operating on a video file to find frames that have a clear structural difference (see the Hampapur patent, column 15, lines 14-18). In addition, the Hampapur patent does not disclose updating a remote computer using results of the comparison between new frame pixels and reference frame pixels. In the Hampapur patent, for example, the result is condensing a video to 14 representative frames that are viewed to give a clear understanding of the contents of a video file (see the Hampapur patent, column 15, lines 14-18). Therefore, the Hampapur patent fails to disclose the preamble or Step (A).

In the present application, step (B) of amended claim 1 requires comparing, using the comparison module, the new frame pixel to a corresponding reference frame pixel of a reference video frame represented in the video signal of the target computer and previously transmitted to the comparison module from the target computer. In step (C) if the final new frame pixel has not been captured, steps (A) and (B) are repeated for the next new frame pixel in the series.

Applicants respectfully contend that the Carrie patent does not teach comparing a new frame pixel to a corresponding reference frame pixel as in step (B). Rather, the Carrie patent describes comparing each pixel of a graphic object to a corresponding pixel in the frame buffer in order to generate a graphic image (Carrie patent, column 5, lines 10-14). The Carrie patent does not teach or suggest a new frame pixel; namely, a pixel from the next frame displayed in the video signal of the target computer, but rather the Carrie patent describes analyzing pixels of a graphic object limited to pixels comprising a polygon to be rendered. In addition, the Carrie patent teaches using the software to analyze pixels of more than one polygon per frame because it teaches using the technique to minimize computation as a result of overlapping polygons (Carrie patent, column 6, lines 47-54). Accordingly, the Carrie patent does not disclose step (B)

In addition, the Carrie patent does not repeat the comparison for each new frame pixel as in step (C). First, the Carrie patent is only concerned with pixels in the graphics object and does not concern comparing two frames, but rather pixels in a rendered graphics object to a frame buffer. Second, after each comparison, the Carrie patent describes checking the pixel buffer to determine if the pixel buffer is full and renders the contents of the pixel buffer (Carrie patent, columns 6, lines 31-36). The pixel buffer is a storage for pixel information with those pixels which cannot be immediately resolved, these pixels are reprocessed over and over in the Carrie patent. Accordingly, the Carrie patent discloses neither step (B) nor (C) of claim 1.

Finally, Applicants respectfully assert the Examiner's rationale to combine the Carrie patent and the Hampapur patent to achieve the claimed invention is in error. The Examiner's stated rationale to combine the Carrie patent with the Hampapur patent is to enable the efficient use of memory (see the Carrie patent, column 2, lines 7-11). However, the priority

of the present application is not to efficiently use memory, but rather to achieve speed in transmission by reducing the amount of data that must be transmitted from the target computer to the remote computer. The amount of memory used, or its efficiency is irrelevant to the present application. Therefore, a rationale as to why one of ordinary skill in the art would have combined the cited prior art to achieve the claimed invention is missing.

Furthermore, there would have been no reasonable expectation of success to one skilled in the art to make the combination of the Hampapur patent and the Carrie patent. The Hampapur patent teaches a method of detecting screen changes and capturing those frames to create meta data for a video. The Carrie patent teaches a technique for rendering polygons on a screen, it delays the rendering of some pixels in order to reduce computations. This combination teaches away from each other. The Hampapur patent is concerned only with which frames to capture and the Carrie patent teaches delay of computation of a screen image until all polygons thereon can be rendered. The two are incompatible at best and at the very least would be inoperable when combined.

Accordingly, Applicants submit that none of the prior art, including the Carrie patent and the Hampapur patent, alone or in combination, teaches, suggests, or renders the invention of claim 1 obvious. Furthermore, there is no motivation in any of the references cited by the Examiner to combine these references in a manner which would render the invention as claimed obvious. Reconsideration of the rejection of claim 1 is respectfully requested.

Reconsideration of independent claim 12 is respectfully requested for at least the same reasons heretofore presented with regard to claim 1. Claims 2-11 depend either directly or indirectly from and add further limitations to independent claim 1. Claims 13-19 depend either directly or indirectly from and add further limitations to independent claim 12. Reconsideration of the rejections of claims 1-19 is respectfully requested.

Application No. 10/775,306
Paper Dated: February 24, 2010
In Reply to USPTO Correspondence of November 24, 2009
Attorney Docket No. 4316-040284

CONCLUSION

Based on the foregoing amendments and remarks, reconsideration of the rejections and allowance of examined claims 1-19 are respectfully requested.

Respectfully submitted,
THE WEBB LAW FIRM

By James J. Bosco Jr.
James J. Bosco, Jr.
Registration No. 51,489
Attorney for Applicants
436 Seventh Avenue
700 Koppers Building
Pittsburgh, PA 15219
Telephone: (412) 471-8815
Facsimile: (412) 471-4094
E-mail: webblaw@webblaw.com